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LETTER

TO

THE RIGHT HON.

THE LORD PROVOST

OF

THE CITY OF EDINBURGH,

REGARDING THE SYSTEM OF EDUCATION

PURSUED AT THE

HIGH SCHOOL.

> "Would not a Chinese, who took notice of this way of breeding, be apt
> "to imagine, that all our young gentlemen were designed to be teachers and
> "professors of the dead languages of foreign countries, and not to be men
> "of business in their own?"
>
> *Works of John Locke*, Vol. ix. p. 162.

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LETTER, &c.

My Lord,

The subject of Education is one of the most important that can be brought under your Lordship's notice, and therefore I make no apology for laying before you a few remarks regarding the system pursued at the High School of this city, of which the Magistrates of Edinburgh are the patrons.

The object of all seminaries of Education is the communication of knowledge, either directly, by means of instruction in the different branches of moral and physical science, and literature—or indirectly, by teaching the languages in which the greatest portion of relative information is contained. The last of these, or a knowledge of *signs* merely, with the incidental, historical, or miscellaneous information to be derived from works studied chiefly with a view to the structure and use of these signs, formed, and still forms, the limit of instruction at the principal grammar-schools of this country. Among the lower orders, however, whose knowledge of grammar is confined to reading their native language, and a little writing or arithmetic, recent experiments have shown, that, even with these humble preparatives, a wide field of physical science may be placed within their reach, and successfully cultivated, by teaching them the principles of the arts, the practical details of which they mechanically exercise.

Such an example is worthy the consideration of those who have the charge of seminaries of learning, in which the youth of the middle and higher classes of society receive their education. If a scientific education be desirable or necessary to those who labour with their hands in the humbler departments of life, it must be much more so to those whose capital and enterprise set those hands to work, by furnishing them with the materials, and wages for their labour. And even to those whose circumstances render it unnecessary for them to study either science or literature beyond what is proper for the accomplishment of their own minds and the exercise of their rational faculties, a further attention to the physical and other sciences than has hitherto been customary, would not be superfluous, either to landholders or legislators. But in the system at present pursued in the preparatory schools for the children of the middle and higher classes, a scientific education, or a knowledge of things, has been strangely overlooked, in the blind admiration of foundations calculated for the youth of centuries back, established at a period in our history when modern literature and science had scarcely a name. While a few of the numbers who attend these seminaries have it afterwards in their power, by a university education, to make up for the deficiency of early instruction, a great and important portion of the community are prevented, in the necessary preparation for the active business of life, from acquiring much beyond what is received during the long-prescribed period of tuition in a grammar-school. Even of those who are enabled to complete their education at a university, this education, except in regard to a very small number, is exclusively directed to those branches connected with their views in life, or is strictly professional; and the greater number of boys who, for a long term of years, have been acquiring the technicalities of classical learning, leave the schools without having learnt much of what is useful to themselves or others to know, and in nine cases out of ten, have, in a very short period, totally or nearly forgotten the rudiments of the languages so painfully acquired.

Such being the case, it has become matter of more than doubt, whether the knowledge of the languages and other incidental information taught at our grammar-schools, estimating these at the high-est rate, are any ways equivalent to the time spent in their imperfect acquisition.* If the knowledge of a dead language be admitted to be only so far of importance, as opening to the mind a wider range of useful knowledge than is to be found in the modern tongues, then assuredly six years of the spring of life, spent in learning a little Latin and a little Greek, is much too long. And when to this is added the fact, that these six years of classical study, as it is termed, forms with the greater number of pupils subjected to its sway the principal part of their education, and almost totally excludes, from the time spent in the acquisition, the learning of anything else,—the importance attached to it becomes very questionable. The knowledge to be gathered from the works of the writers of ancient Greece and Rome, bears now, whatever it once did, but a small proportion to that embodied in the modern languages of Europe; and, in point of practical utility, its value is infinitely less. I grant that, besides merely learning a little Latin and a little Greek, in the six years thus employed, the boys do also learn something of Roman and Grecian history, mythology, and philosophy. And if these are considered of value, can it be said that modern history and modern science are of no importance,—or that the study of these last should even be postponed as the less necessary of the two? The information conveyed by the one is applicable to a state of society two thousand years ago, and may be matter of historical interest, or moral illustration; that of the other is adapted to the present state of society, and imperiously called for in all the relative duties of modern life.

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* "At a meeting of the President and Fellows of Yale College, September 11, 1827, the following resolution was passed: That his excellency Governor Tomlinson, Reverend President Day, Reverend Dr Chapin, Hon. Noyes Darling, and Reverend Abel M'Ewen, be a committee to inquire into the expediency of so altering the regular course of instruction in this College, as to leave out of said course the study of the *dead languages*, substituting other studies therefor," &c.—*American Journal of Science and Arts*, vol. xv. p. 297.

I am far from wishing to rate classical knowledge, as it is termed, below its real or even supposed value, and equally far from wishing to circumscribe the routine of education in seminaries such as the High School, by bare ideas of utility in the future business of life. But at the period when grammar-schools were founded in this country, your Lordship will bear in mind, that the study of classical literature, or "humane letters," was only of importance as qualifying candidates for offices in the church, the chief aim of the universities of the period, or as embodying an extent of information in government, history, &c. that had no equivalent in European literature and science. It was wise in our forefathers upon this last ground, in establishing such seminaries, to prescribe a long course of study in what was then of paramount necessity, as the only medium of knowledge. But circumstances are now no longer the same. The literature of modern Europe is at least equal to that of the Greeks and Romans—its languages are not less expressive—and its science vastly superior to anything of the same name in the ancient world. Modern philosophy soars incalculably beyond the dreams of their wisest sages, and it would be impious to compare the religion of Christianized Europe with the obscene mysteries of the heathen mythology. If it were wise and expedient, two hundred years ago, to establish grammar-schools for teaching languages in which all the learning of the time was to be found, it is equally necessary now, in the altered state of things, to modify these institutions to existing circumstances.

Besides, the earlier modern writers in science, from the unsettled state of the European tongues, and the limited range of circulation their books would have had if written in the vernacular language, were from these causes induced to compose their works chiefly in Latin; and thus for a long period knowledge was shrouded from the vulgar gaze in the veil of a dead language. In attempting to master the difficulties of a language not spoken, the modern languages of Europe were neglected by men who would have been more profitably employed for their contemporaries and posterity, in communicating information in the vulgar tongue. The learned, founding their ideas on the paramount importance of particular signs, may thus be said to have written only for the learned; and it was not till writers had so far burst from the trammels of a dead language as to condescend to address the mass of the people in their indigenous tongues, and the European languages came to be cultivated as vehicles of information, that knowledge was spread over the great mass of society; and that that improvement in every branch of literature and science took place, which has raised the modern Europeans so far above the ancient nations. The translation of the Bible into the vulgar tongues of Europe hastened and secured the progress of the Reformation; and knowledge spread abroad in the vernacular languages of Europe through the medium of the press, has effected an equal improvement in all the arts and sciences. It is perhaps not too much to say, that in many instances this improvement has been retarded by a too long continuance of the very means which first gave rise to it, but a slavish attachment to which has since concealed the main end from view. Classical learning, whatever it once was, is now neither the exclusive nor the principal guide to literature or the sciences.

In the present state of the world, it seems really too much that so great a portion of the term of human life should be employed chiefly in acquiring a knowledge of *signs*,* and that almost all the youth of a most important class of society are necessitated to spend the most valuable part of their time in learning languages totally or nearly useless to nine-tenths of those who do acquire them. And when it is considered that the remaining portion of life in the greater number is necessarily devoted to preparation for the business of human society, and that there is thus little time left for the acquisition of any knowledge that does not directly bear on the pursuits of manhood,—it becomes a matter of the deepest consideration for those who have the control of our classical establishments, that such knowledge be there communicated as is best calculated for individual improvement, and the wants of the present state of society. But we have been so long accustomed to attach a high value to classical education as the medium of liberal knowledge, without reference to the change that has taken place in Europe within the last two hundred years, that it still holds the same place as when all knowledge was exclusively confined to the dead languages. We still cling to the ladder which has raised us to the eminence, forgetting that when the ascent is attained we might start from a new elevation.

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* "There are two principal avenues to knowledge—the study of words and the study of things. But words are but the arbitrary signs of ideas, and have no value independent of those ideas. To account the mere knowledge of words, therefore, as wisdom, is to mistake the cask for the wine, and the casket for the gem. I say all this, because knowledge in words is often extolled beyond its just merits, and put for all wisdom, while knowledge of things, especially of the productions of nature, is derided as if it were mere folly."—Kirby and Spence's *Introduction to Entomology*, vol. i. p. 25, 26.

I do not assert that classical literature, as a branch of general education, is in every case unnecessary. To the few who speculate on the improvement of the human mind and the developement of its powers, or to the historian of ancient science, laws and manners, it may no doubt be more satisfactory to consult the records of ancient nations in the languages in which they were written, than to learn the same facts through the medium of modern translations and commentaries. My only object is to show, that the time spent in the acquisition bears no proportion to its real value, and to the changes which have taken place in the literature of modern Europe since the institution of grammar schools. If the dead languages were only or chiefly of importance at that period, as containing the greatest portion of information in history, philosophy, and science in general, now that the modern European languages contain a mass of knowledge on all subjects infinitely superior, and applicable to the present condition of society, it seems to follow as a necessary inference, that some portion of that information might be advantageously substituted in place of, or taken alongst with, the classical tasks of our grammar schools—that the elements of some of the arts and sciences in which all in this country are more or less interested, should be taught to those upon whom the prosperity of the empire is in the next generation to depend. I might even go farther and assert, that to those who do not mean to follow out any of the learned professions, where a knowledge of the dead languages is imperative, either on their own account, or as affording presumptive, but far from conclusive, proof that the possessor of this qualification is equally conversant with the history and science of modern times—all that is valuable in the classics, either in science or literature, is open to the English or French reader in their own languages. And even of those destined to follow learned professions, the six years apprenticeship of the High School, with two supplementary ones at the University, besides the assistance of *grinders* of every description—medical, law, and divinity—to qualify the student for examination in a language which, in nine cases out of ten, he is speedily to forget when the purpose of the grinding is accomplished, is felt to be a serious interruption to the acquisition of the real knowledge which is to be useful to himself and society.

Neither, however, would I confine the education in seminaries such as the High School to mere purposes of professional utility, or with a sole reference to the future business of life. Man has intellectual as well as physical wants and pleasures, and early education should provide for both. An accomplished classical scholar is supposed to have many resources in his own mind, independent of the smiles or frowns of fortune; but how much more would the rational enjoyments of life be heightened, if, from an early acquaintance with some of the branches of physical science, youth were almost insured against all the evils which idleness and want of aim are sure to generate! "The principal recommendation of this class of our pleasures (the pleasures of the understanding) is derived (says Mr Dugald Stewart) from the constant and inexhaustible resources they supply to the mind in its progress through life. A turn for science may be safely pronounced to be the happiest of any: and that which we may venture with the greatest confidence to recommend to youth, as the most solid foundation for the future comfort of their lives; more particularly when we consider how very little the pleasures of the understanding depend on external circumstances and on the caprice of fortune." *

In what I have stated, I have proceeded on the generally received assumption that the period of six years, employed in the acquisition of a little Latin and a little Greek at our grammar schools, is absolutely necessary for this purpose. That it might be advantageously shortened, however, by improved methods of instruction, no one can doubt, when it is considered that the modern European languages, French and Italian, are acquired with facility, even by girls, in one half the time. With this fact before us, it is idle to say that Latin is more difficult for boys than these languages are to their sisters. No masters in Italian, French, or German, would have a single pupil, were they to combine, which is improbable, to exact fees for six or eight successive years, even though they taught four hours a-day in place of one. And if these languages can be acquired in two or three years, at the expence of one hour a-day, I leave the inference to your Lordship's judgment, of what might be effected in Latin and Greek. Even in our University, the most abstruse as well as the most useful sciences are taught in half the time that is considered necessary in grammar schools, to acquire the rudiments of a single lan-

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* *Philosophy of the Active and Moral Powers*, ii. 439.

guage, the use of which to the individual is as nothing to the time spent in its acquisition. And were the real knowledge taught with so much success in this celebrated establishment, in place of being communicated in one or two six months courses, to be doled out in a six years apprenticeship for every branch of science, human life would be exhausted before the student could be qualified for the proper business of life. As an instance how slow the progress of improvement is when opposed to prejudices or interests, it may be noticed, that, even in the High School till very recently, the pupils at that establishment had to acquire their knowledge of Greek through the medium of the Latin language; and from the difficulties of this double translation, their progress must have been materially retarded.

" The notions on education (says Dr Arnott) prevalent in the world until recently, have been as erroneous with respect to the comparative importance of different branches of knowledge as with respect to the order of study. Thus at many of our famed schools, and even universities, the attention has been directed almost solely either to *Languages* and *Logic*, or to *Abstract Mathematics;* the preceptors seeming to forget that these objects have no value but in their application to *Physics*, *Chemistry*, *Life*, and *Mind*. The reason for bestowing much attention on the

Greek and Roman languages was good some centuries ago, because then no book of value existed which was not written in one of those languages; but now the case is completely reversed, for he who learns almost any matter of science from old books is learning error, or at the least knowledge which falls far short of modern erudition. As to the higher mathematics, again, while they merit the greatest honour which man can bestow, as being the instrument by which many useful discoveries have been made, and the conjectures of powerful minds have been confirmed, still a very deep investigation of them is neither possible to the generality of men, nor if it were so, would it be a useful employment. The mode of proceeding to which we have now alluded, is just as if a man, to whom permission were given to enter and possess a magnificent garden, on condition of his procuring a key to open the gate, and measures of all kinds to estimate the riches contained within, should waste his whole life on the road in polishing one key, or in procuring several of different materials and workmanship, and in procuring a multiplicity of measures." *

But to avoid interference with existing regulations—allowing that a six years course is necessary to acquire a preliminary knowledge of Latin and Greek—and granting that this knowledge is

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* Arnott's *Elements of Physics*, p. xxx, xxxi.

of the supreme importance attributed to it—may not something else be taught during that long period, which, without materially interfering with this classical discipline, yet be of greater consequence to the student, as increasing his knowledge of the science of his own time, and applicable to the every-day business in which he may be afterwards employed, either as artist, capitalist, or legislator? There can be no doubt in the minds of any conversant with the subject, or with the nature of the human faculties, that many branches of physical science may be taught simultaneously with the classics at that period of life, with greater benefit than at any other. And even should the acquisition of these trench somewhat on the aimless studies of the abstract grammatical construction of languages not now spoken or written, the advantage to the pupil would be infinite in comparison. The mind in youth is eagerly alive to every thing around; and this natural curiosity is calculated, when proper objects are presented to its gratification, to open up sources of knowledge, of infinitely more importance to the happiness of the individual and to society, than all the philosophy of ancient Greece and Rome.* Among these, the objects of external nature press themselves on the unsophisticated attention of the being for whose enjoyment they seem chiefly calculated, and court his notice by all that is beautiful in colour or form, and all that is wonderful in structure and economy. But in our elementary schools this natural and universal feeling, in place of being taken advantage of as it ought, has hitherto been repressed by the moral chains with which custom and prejudice have fettered the education of the young; and in place of leading their minds to the contemplation of the wonders of nature around them, or teaching them to look abroad upon the moral or civil constitution of a world in the business of which they must soon take an active part, our youth are taught to shut their eyes on all but the consecrated images of scholastic idolatry set before them, till the invaluable period of early impressions has passed away. The moral lessons which the study of the works of creation around us is calculated to convey are thus kept from the view of the only being capable of appreciating and feeling their value; and even the study of the arts and sciences, on which our national superiority rests, and in which all are more or less interested, is totally sunk in the comparatively valueless pursuit of ancient lore. Were but one hour a-day devoted to communicating a general knowledge of the principles of Natural Philosophy, Chemistry, or Natural History, all of them in every view vastly superior to any thing to be extracted by painful study from the writings of the Greeks and Romans, how much better would the youth be qualified for entering on his future career of business or study! and how much would his resources be increased, by opening varied and boundless fields of rational enjoyment to his mind, which plans of education unsuited to the present times have hitherto excluded from his view!

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* "There is no circumstance of greater consequence in education than to keep the curiosity always awake, and to turn it to useful pursuits."—Dugald Stewart.

Of all the physical sciences, the study of the objects of external nature, or Natural History, is that which seems most particularly adapted to the feelings and capacities of youth. Hitherto our schools have been strangely deficient in supplying information with regard to this branch of science, and behind many of the Continental seminaries, though no other species of study is so well calculated to regulate and improve the mind, or to pave the way for the acquisition of the other sciences. "The external objects with which we are surrounded (says Dugald Stewart,) are so accommodated to our capacities of enjoyment, and the relations which exist between our frame and that of external nature are so numerous in comparison of what we perceive in the case of all other animals, as to authorize us to conclude, that it was chiefly with a view to our happiness that the arrangements of this lower world were made."—" To employ our faculties in studying these evidences of power, of wisdom, and of goodness, which He has displayed in his works, as it is the foundation, in other instances, of our sense of religious obligation, so it is in itself a duty incumbent on us as reasonable and moral beings."* —" The Natural food of our minds," says Cicero, " is the study and contemplation of Nature." †

The introduction of the study of physical science into our grammar schools would not, it is believed, materially interfere with any thing useful in the routine of classical education, even allowing this to be of the importance ascribed to it, and of which the mode of education followed out by long habit has tended to encourage the idea. Most of the branches of which I propose the introduction would rather be viewed in the light of relaxation than otherwise. Unlike the technicalities of grammatical discipline, where the means for reaching an undefined end are the principal study, the labour would be forgotten in the pleasure arising from the consciousness of actual knowledge gained at every step of the progress; and that knowledge, too, enhanced by its connection with the arrangements of art, or by its explanation of the phenomena of nature. Besides, in Natural History particularly, the generic and scientific terms being derived from the Greek and Latin, at least one object in mastering the difficulties of these would be held out to the student; and even as to many of those whose acquaintance with the dead languages otherwise ceases when the term of their grammatical apprenticeship has expired, some fragments of them would still linger in their memories, associated with objects of their early interest.

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* *Philosophy of the Active and Moral Powers of Man*, vol. ii. p. 51 and 253.

† *Acad. Quæst.* l. iv. xli.

It may perhaps be said, that, in the view now taken, justice has not been done to the merits of classical education, in training the mind to habits of analysis or concentrated thought. But in the study of any of the branches of Natural History, this mental discipline is much more fully gained than by any other means, at the same time that information is communicated regarding the structure and functions of organized bodies, the relative place they occupy in regard to the universe, and their connection with man, and his wants or pleasures. A practical logic infinitely superior to the logic of the schools, is acquired without effort in tracing analytically a given object from its station in the system to its individual place.* And even the consideration of mathematical lines and figures relative to their use in physics, which has been placed far before grammatical exercises in habituating the mind to concentrated attention, are in the objects of natural history found not only delineated with matchless skill, but combined with their action in the organs of living structures,—presented to the view in action in a thousand interesting ways, and wonderfully diversified. "The habit, (says Cuvier) naturally acquired in studying natural history, of classing in the mind a great number of ideas, is one of the advantages of this science less noticed, but which shall become the principal one when it shall be generally introduced into the schools."—"This art, once acquired, is applied with infinite advantage to studies the most distant from Natural History. Every discussion which involves a classification of facts—every research which infers analytical examination, is made according to the same laws; and the youth who studies this science merely as an object of amusement, is himself surprised at the facility which it has procured him of unravelling the most complicated affairs."*

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* All modern writers on this momentous subject (the education of youth) unite in recommending in this view Natural History; and there can be no doubt of the judiciousness of their advice."—Preface to Kirby and Spence's *Entomology*, p. xv. vxi.

As an auxiliary, then, to the studies of the grammar school, I venture to propose the introduction of NATURAL HISTORY, as presenting a wide range to the curiosity of youth—as more adapted than any thing else to improve their minds—and as the base of all the sciences. In all its branches it is the science most important to man, as from its objects all his wants and conveniences are supplied, both in health and in disease; and from the productions of nature are derived all the materials of commerce and the arts.* And what particularly should recommend the study of nature in all academies for the instruction of youth, is its infallible tendency to impress the mind with deep reverence towards that Great Being, whose wisdom and power and beneficence are imprinted in its most minute productions. Unlike those pursuits "which lead to bewilder and dazzle to blind," the study of nature is the surest antidote against scepticism, and the safest guide to youth. It would be a solecism in human nature, indeed, to suppose an investigator of the wonders of creation around him otherwise than devout; and were a general knowledge of the principles of natural history to form a part of the education of those destined to the service of the Church, the illustrations of Divine wisdom and beneficence to be drawn from objects palpable to all, would, there can be no doubt, powerfully increase the moral impressions which discourses from the pulpit are intended to convey. "Behold the fowls of the air!"—"Consider the lilies of the field!" is, according to Mr Cordiner, the finest argument, and the sequel of the passage the noblest inference that ever was drawn from the contemplation of the works of nature.*

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* *Le Règne Animal,* i. xviii. xix.

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* "L'Histoire Naturelle est la source des autres sciences, et la mere de tous les arts."—Buffon, *Hist. Nat.* Vol. i. p. 35. Sonnini's edition.

In the dreadful Revolution in a neighbouring country, which desolated Europe, and levelled at once the throne and the altar, it is a singular fact, that the votaries of nature alone were untainted by the follies and crimes of their contemporaries; and this "peaceful study," in such a view of its effects, seems not unworthy of legislative encouragement. "Extended enough to satisfy the vastest wish, (says the greatest naturalist of the present day in reference to this revolution,) and possessing interest to calm the most agitated mind, it consoles the unfortunate, and moderates the virulence of hatred. Once raised to the contemplation of this harmony of nature, irresistibly regulated by Providence, how feeble and insignificant are the portions of our destiny left to the arbitrary will of men; and how astonishing is it to see so many individuals of splendid genius, waste their powers so uselessly for their own happiness and that of others, in the search of vain combinations, of which a few years obliterate even the very traces."*

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* "Duo namque sunt quæ in cognitionem Dei ducunt, Creatio et Scriptura."—AUGUSTINE.

"HE hath set before us his Word and his World. The former is the great avenue to truth and knowledge by the study of words, and, as being the immediate and authoritative revelation of his will, is entitled to our principal attention; the latter leads us to the same conclusions, though less directly, by the study of things, which stands next in rank to that of God's word, and before that of any work of man. And whether we direct our eyes to the planets rolling in their orbits, and endeavour to trace the laws by which they are guided through the vast of space; whether we analyse those powers and agents by which all the operations of Nature are performed, or whether we consider the various productions of this our globe, from the mighty cedar to the microscopic mucor—from the giant elephant to the invisible mite,—still we are studying the works and wonders of our God. The book, to whatever page we turn, is written by the finger of him who created us, and in it, provided our minds be rightly disposed, we may read his eternal verities. And the more accurate and enlarged our knowledge of His works, the better shall we be able to understand His word, the more readily shall we discern his truth in his works, for, proceeding from the same great Author, they must, when rightly interpreted, mutually explain and illustrate each other." —Kirby and Spence, Vol. i p. 26, 27.

Similar quotations as to the moral influence of the study of nature in effecting more as to the regulation of the mind and heart than any other branch of human pursuit, might be multiplied from all the writers on the subject. For these there is no room in a single letter. I shall therefore conclude with an extract from Dr Paley, written without any reference to the purpose for which it is here quoted, but more valuable on that account, as exhibiting the convictions of an enlightened mind on a subject of paramount importance.

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* Cuvier, *Le Règne Animal*, i. xix.

" Perhaps almost every man living has a peculiar train of thought, into which his mind falls, when at leisure from the impressions and ideas that occasionally excite it: perhaps also the train of thought here spoken of, more than any other thing, determines the character. It is of the utmost consequence, therefore, that this property of our constitution be well regulated. Now, it is by frequent or continued meditation upon a subject, by placing a subject in different points of view, by induction of particulars, by variety of examples, by applying principles to the solution of phenomena, by dwelling upon proofs and consequences, that mental exercise is drawn into any particular channel. It is by these means at least that we have any power over it. The train of spontaneous thought, and the choice of that train, may be directed to different ends, and may appear to be more or less judiciously fixed, according to the purpose, in respect of which we consider it: but, in a *moral view,* I shall not, I believe, be contradicted when I say, that, if one train of thinking be more desirable than another, it is that which regards the phenomena of nature with a constant reference to a supreme intelligent Author. To have made this the ruling, the habitual sentiment of our minds, is to have laid the foundation of every thing which is religious. The world from thenceforth becomes a temple, and life itself one continued act of adoration. The change is no less than this, that whereas formerly God was seldom in our thoughts, we can now scarcely look upon anything without perceiving its relation to Him. Every organized natural body, in the provisions which it contains for its sustentation and propagation, testifies a care on the part of the Creator expressly directed to these purposes. We are on all sides surrounded by such bodies; examined in their parts, wonderfully curious; compared with one another no less wonderfully diversified. So that the mind, as well as the eye, may either expatiate in variety and multitude, or fix itself down to the investigation of particular divisions of the science." —" The works of nature want only to be contemplated. When contemplated, they have every thing in them which can astonish by their greatness: for, of the vast scale of operation through which our discoveries carry us, at one end we see an intelligent Power arranging planetary systems, fixing, for instance, the trajectory of Saturn, or constructing a ring of a hundred thousand miles in diameter to surround his body, and be suspended like a magnificent arch over the heads of his inhabitants; and at the other, bending a hooked tooth, concerting and providing an appropriate mechanism for the clasping and reclasping of the filaments of the feather of a humming-bird."—" In every portion of Nature which we can descry, we find attention bestowed upon even the minutest parts. The hinges in the wings of an *earwig*, and the joints of its antennæ, are as highly wrought as if the Creator had had nothing else to finish. We see no signs of diminution of care by multiplicity of objects, or of distraction of thought by variety. We have no reason to fear, therefore, our being forgotten, or overlooked, or neglected." *

In conclusion, I again repeat, that the routine education of grammar schools, from a complete change of circumstances, is not now of the same importance, as when all that was valuable in literature or science was included in the study of the Greek and Roman writers. It is not now that the classics can be said to include even a tithe of that knowledge which the modern European languages contain; and at the present period, it becomes matter of deep and serious responsibility in those who have the control of large seminaries for the education of youth, that the information there communicated be somewhat adapted to the intellectual standard and wants of modern society. The Honourable Patrons of the High School have often exercised the discretionary power they possess with regard to the University under their patronage, of establishing new chairs for branches of science not contemplated in its original foundation—appointments which have raised its character as a seminary far beyond those establishments, where the progress of knowledge is arrested by charter, or obstructed by slavish adherence to systems calculated for the youth of four centuries back. The wisdom of their determination has been evinced by the unrivalled celebrity of the University of Edinburgh. An exercise of the same discretionary power in introducing into the High School an elementary knowledge of the principal branches of physical science, to be taught simultaneously with the structure of the Greek and Roman tongues, during the long term of classical discipline, would, there is no doubt, be attended with effects equally desirable. With these adjuncts, the HIGH SCHOOL of Edinburgh would become still more worthy of the name; the celebrity of the city as a seat of useful as well as ornamental learning would be mightily increased; and pupils from a distance would crowd its halls, and even swell the numbers of the present classes, allured by the attractions of modern science. To those whose High School education forms the whole public teaching they are destined to receive, the boon would be invaluable, by opening to their minds new sources of pleasure and rational pursuit, to occupy the hours of idleness or relaxation; and to those who afterwards complete their studies in the university, this preparatory and elementary knowledge would be of equal benefit to their future progress. A nursery for the University in such an institution as the High School, would powerfully increase the means of intelligence among that portion of the community whose knowledge is the surest bulwark of the national prosperity; and new views would be opened up to thousands, of powerful effect in the conduct of the understanding and the regulation of life. One hour a day, or one day in the week, abstracted from the tasks of the grammar school during its long period of classical training, and devoted to studies such as I recommend, would put more solid learning in the power of the pupil, than a life spent in the study of the peculiarities in the matter or style of the greatest writers of antiquity.

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* Paley's *Natural Theology*, 8vo, London, 1802, p. 575, *et seq.*

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